weeks, till the tendons have become firmly fixed in their new position. When the plaster is removed massage is actively performed, and the patient encouraged to gradually use the limb. This allows of the muscle undergoing the necessary hypertrophy. At this time there is considerable tendency for the foot to evert; this is owing to the previous stretching of the ligaments about the inner side of the joint, and in many cases to some alteration in the articular face of the astragalus. To obviate this, I used for some time a boot which stiffened sides. It is probably true that the patient cannot use the transposed muscles to advantage without much practice.

The decision of the operation to be performed in talipes valgus obviously depends on the muscles affected; in severe cases a stable ankle joint will only be obtained by ankylosis of that joint, or the subastragaloid articulation. Case 3 was on the borderland of this group, and a better function might have been obtained by using this method. When the tibialis posticus is paralysed, there is usually a certain amount of flattening of the arch of the foot. In some cases, indeed, the flat foot is very marked. It is impossible to remedy this by any form of tendon transplantation, and an appliance to raise the instep must be subsequently worn. When the muscles in front and behind the inner malleolus are affected, it is best to bring a reinforcer in both these situations. When it is possible to use only one reinforcing muscle, it is preferable to bring it behind the ankle, as it is here that most of the strain of evertion comes. Case 3 illustrates this. It is somewhat doubtful which of the peronei should be made use of. The peroneus longus is the more powerful muscle and its tendon can be got much longer than the brevis. It undoubtedly cripples the power of the foot to transfer the peroneus longus, but in any form of tendon transplantation the function of the limb does not come up to the normal standard. The peroneus brevis, when it is brought across the front of the ankle, can only be fixed to the under surface of the navicular bone when it is lengthened by strands of silk; it is also a comparatively feeble structure. For these reasons, I have always made use of the longus. Slight degrees of talipes valgus, where only one or other of the tibials is affected, give very satisfactory results after tendon transplanting. Where the anterior tibial is the only muscle paralysed, the extensor longus hallucis may be fixed to the navicular. The loss of power in the great toe is of little moment. Where the tibialis posticus alone is powerless it is probably best to use a slip off the tendo Achillis to strengthen the ankle. The peroneus brevis has been selected and brought behind the joint, but it is a feeble muscle compared to the one it is intended to replace, and probably would not counteract the evertion. The peroneus longus is the more suitable muscle to use, if we decide not to interfere with the tendo Achillis.

Nerve anastomosis is the more rational plan of treatment in infantile paralysis, which is essentially a nerve lesion. After nerve crossing there is some power in all the muscles. Recently, where it has been possible I have always selected this operation in treating such cases. If the anterior tibial muscle be the only one involved it is easy to fix its nerve into a gap in the peroneal nerve, or, if preferred, it may be split off the latter nerve for some distance and then fixed into a gap in the internal popliteal. The nerve supplying the tibialis posticus is deep in the calf, and a very difficult dissection is necessary to expose it, with a considerable chance of wounding big vessels. When, in addition to these two, other muscles are paralysed belonging to opposite groups, nerve crossing is out of the question. Thus talipes valgus does not offer the same field for nerve surgery as do paralyses involving the peronei or extensor muscles.

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A BELGIAN SCHOOL OF TROPICAL MEDICINE. — The Belgian Ministers of Agriculture and of the Interior have presented a joint report to the King relative to the establishment of a school of tropical hygiene and medicine at Antwerp. A Committee has been appointed to study the question and prepare a scheme to be submitted to the Government. The Chairman of the Committee is Dr. G. Verriest, Professor of Clinical Medicine in the University of Louvain, and President of the Belgian Academy of Medicine.

PAPAIN IN MALIGNANT GROWTHS.

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THE treatment of malignant neoplasms by the interstitial injection of papain has been restricted up to now to inoperable cases. The supply of these is, of course, scanty in a small community. It has, consequently, been necessary to let some months elapse before supplementing the letter on this subject published in the BRITISH MEDICAL JOURNAL of June 16th.

Opportunities for studying the action of papain on cancer would be still rarer were it not for two circumstances. One is, that the people of all parts of St. Kitts, as well as of many of the neighbouring islands, foreign as well as British, are accustomed to resort to Basseterre, when practicable, whenever they need surgical assistance of any importance. The other circumstance is, that, unfortunately, it is also the custom of the coloured peasantry of the Lesser Antilles to put off application for medical aid in chronic ailments till these have nearly or quite reached a hopeless stage. It would not be easy for a doctor practising among Europeans to realize the anomalous features and monstrous developments which some diseases—for example, syphilis and cancer—have acquired from neglect and preposterous home treatment before they are brought to the notice of a West Indian practitioner.

Only five cases of cancer that were desperate, and, therefore, suitable for the trial of a new method of palliative treatment, have as yet been obtainable. All of these, however, had more than one nodule or tumour; several of these growths had to be injected more than once, and each injection afforded an additional opportunity for observation. The dosage and manipulation mentioned in this paper should be regarded only as a cautious technique, as there has not yet been time for the collection of data for establishing the safest and most efficient method of procedure. The details of treatment and results, which were common to all the injections, are recorded together. One case has been described separately, because its treatment differed from that of the others in one material point.

The site of puncture was cleansed with a 2 per cent. solution of lysol. Local anaesthesia was effected either by partial freezing with ethyl chloride or by the insertion of ½ gr. of cocaine hydrochlorate dissolved in distilled water twenty minutes before the little operation itself. The papain emulsion was made just as it was about to be used, and contained 1 gr. in every 5 minims of cold distilled water. From 5 to 20 minims of this emulsion were introduced at one time, according to the size of the nodule or tumour; ½ gr. was the smallest dose given. This destroyed a hard nodule about the size of the kernel of an almond. The instrument used in all the injections was a Gee's hypodermic syringe fitted with its largest needle. This was sterilized and a drop of emulsion made to appear at its point before its insertion. If the tumour was large, the needle was made to pause two or three times while some of the emulsion was ejected, so as to establish two or three foci of action along the one line of insertion. Only a slight puncture was made. The operations were repeated at intervals of from two to four weeks. They were all performed by Dr. Edmund Branch.

Should the treatment just described ever come into vogue, it will, no doubt, undergo modifications in many directions. Questions as to dosage, number of separate punctures at one time, and interval of time between injections cannot be definitely answered at present. It may be found expedient to exhibit, a little before or after the papain or to combine with it, compatible antiseptics, anaesthetics, or styptics. As papain is simply papayotin—the entire juice of the papaw fruit *minus* colloid substances—it contains all that is absolutely necessary for the efficient disintegration of flesh. It is said that papayotin is also antiseptic. It is curious that, though flesh wrapped in papaw leaf is soon disintegrated, it does not at the same time become putrid. But adjuvants or excitants of prompt action may be found which would enable the dose to be diminished when that might seem advisable. According to many authorities, the water in the pitcher of nepenthes will not act as a digestive till it has been imbued with some unknown acidulous principle. So, too, the pedicellate

glands on the leaves of the sundew contain a fluid which is not charged with full insectivorous powers till the victims have been caught. The secretion is then not only increased, but changed from neutral to acid.

Nearly all of the following phenomena have been observed after every injection: A burning sensation comes on soon and lasts for about half an hour. Curious but scarcely painful feelings, as if some small animal were nibbling at the flesh, begin some hours after and wear away in a day or two. Nausea is sometimes complained of in association with the burning or nibbling sensations. The tumour softens round the site of puncture in two or three days; there is then a slight rise of temperature. In about ten days, on an average, the tumour begins to discharge copiously through a small hole a thick greyish or greenish stuff, having much the appearance of the emulsion itself. This has happened eventually in every case, but not always after the first or even the second injection. The discharge ceases after one or more weeks. The temperature subsides on its appearance, and remains normal, or nearly so, during its continuance. When the discharge stops, the tumour is found to have entirely disappeared or to have become notably smaller. If there be no discharge after a first or second injection, the tumour is still more or less diminished in size by it. Cancer pains cease after the first injection. Nothing analogous to "serum sickness" or a "negative phase" has been noticed in connexion with the injection of papain into cancer.

In one patient "stormy symptoms" occurred, though the doses were only half as large as those given at shorter intervals in some other cases. This old lady had hysterical excitement, vomiting lasting for a day, and rise of temperature to 102°, or near it, after each of the first three injections. Immediately after the fourth her breathing became oppressed, and the skin was suffused with a livid flush. These symptoms wore off in half an hour. As it is said that a toxic dose of papain paralyses the heart she may have been intolerant of the drug, for she was suffering from valvular disease in a far advanced stage. Under these circumstances, it was reluctantly decided to abandon the effort to eradicate the cancer. She had already undergone amputation of the breast and the cutting out of a large recurrent scirrhous growth. From the condition of her heart it had been decided that it would be inadvisable and hopeless to resort for a third time to the knife. When she last applied for medical aid, it was on account of two large, rapidly-growing, and hard tumours under the skin of the chest. One of these had already disappeared entirely from papain injection, when this mode of attack on the disease had to be discontinued. She died two months after in a paroxysm of palpitation and dyspnoea. The lancinating pains never returned, not even in a new scirrhus that formed on the back of the chest.

An important divergence from the general programme of treatment was necessitated by the circumstances of the following case:

M. S., a black woman, 65 years old, and the mother of many children, who was admitted into the Cunningham Hospital with scirrhus of the right mamma. It was very large, hard, and the site of frequent and severe lancinating pains. The skin from the breast to the clavicle was thickened and brawny. The pectoral fold, up to the shoulder, was indurated, and the glands in the armpit were agglomerated into a mass of rocky hardness. She said that she wanted the breast taken off, because the pains in it gave her no rest. Though the disease was primary and in an operable region, nothing could be hoped for from the ordinary operation. Dr. Edmund Branch amputated the breast by a wide, elliptical, transverse incision, the upper line of which had to run through cancer-infiltrated tissue. Closure of the wound had not been contemplated, and was not attempted. It was dressed with papain ointment, 1 drachm to 1 oz. of lanolin, and bathed twice a day with a 2 per cent. solution of lysol. The mass in the axilla was injected eighteen days after with 2 gr. of papain in the usual emulsion. This was followed in about ten days by an abundant flow of thick grey stuff for several days. When this ceased, the axillary mass had quite disappeared. After an interval of thirty days the same sized dose of papain was injected into the indurated pectoral fold. In a week or so the grey discharge began to pour from the pectoral fold, and continued to do so till the tissues became normal to sight and touch. Meanwhile, the big mammary wound had healed rapidly, and was now only the size of a florin. Its margins were apparently normal, and so was the once brawny integument in its neighbourhood. She had no more pains, and was anxious to go home. She came two or three times among the out-patients, but as soon as the wound had cicatrized entirely she could no longer be found, though she had been warned that the disease would probably come back soon, and that the appearance of the smallest lump would necessitate her immediate return to the hospital. Search was made for her without success, but she presented herself for examination two or three days ago. A ring of nodules had formed round the cicatrix. People of her class and race are fatalists. She positively refuses to let anything more be done.

It seems possible that papain injections may be admissible in the treatment of some cases of primary cancer and other tumours. I have lately come across a statement that papain has been applied, I suppose externally, to epithelioma; but there was no mention of the result. It is very likely that it was satisfactory. I rubbed the fresh juice of the root of the papaw tree on two small growths, neither of which was malignant. They were both entirely eradicated by a few applications. The little operations were perfectly painless, surpassing in this respect similar ones done with sodium ethylate. Perhaps leprous tubercles might be removed in this way with less pain and disfigurement than by the acrid juice of the cashew.

Dr. Shaw Mackenzie points out, in an instructive little note in the BRITISH MEDICAL JOURNAL of July 7th, that temporary improvement in the local manifestations of cancer do not justify the conclusion that the medicinal agent employed can cure cancer. This is corroborated by the preceding paragraphs. There is no hint in them that any case was cured. There has not, indeed, been time as yet to justify such a claim, nor is it likely ever to be justifiable with respect to such of these patients as are still under observation; but it must be remembered that these 5 cases were selected for the very reason that their condition was hopeless. Their record demonstrates, however, that papain can remove recurrent manifestations of scirrhus, in an operable region, as effectually as if they had been cut out with a scalpel. With the help, therefore, of this drug, the external development of recurring cancer can be controlled if the sufferers apply for help at the first appearance of each fresh nodule.

But the local antagonism between the medicinal agent and the neoplasm suggests a correlated antidotal relation of the former to systemic cancer. This, however, is far too important a subject to be broached at the foot of so long a paper.

HYDATID CYST OF THE NECK, WITH CELLULITIS CAUSED BY RUPTURE AND ESCAPE OF HYDATID FLUID.

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RECORDS of hydatid cysts about the cervical region are not numerous; in addition this case presents several points of a rather unusual nature.

History and Condition on Admission.

The patient was a gardener, a strong and active man, aged 32. When he was 18 a small lump made its appearance on the left side of his neck; it had continued to grow ever since, until it had reached the size of a large cricket ball, but it had never given him any pain or inconvenience.

The day before I saw him he had been put to some extra exertion by cycling, and had been doing some rather heavy work in the garden. During the evening he felt feverish, and was awakened in the night by an aching pain in the neck. When he got up in the morning he found that his neck had swollen to a tremendous size. He was seen by Dr. Hayward, of Abingdon, who sent him to the Radcliffe Infirmary, where he came under my care. He then had a large swelling on the left side of his neck, which he complained ached a little and felt hot to him; this swelling extended from just below the horizontal ramus of the jaw to below the left clavicle, and from the middle line in front to the middle line behind, the skin over it being red, inflamed, and oedematous, the oedema extending to the right across the middle line, below on to the chest wall as far as the nipple, and behind to the middle line and down over the scapular region. The tumour itself was the size of a fetal head, tense and fluctuating but not painful; the patient said it was twice the size it had been on the previous day. There was so much oedema that it was difficult to make out the relationship of parts; neither the lower part of the left sterno-mastoid nor the sternal end of the left clavicle could be defined. There was no constitutional disturbance; temperature, pulse-rate and respirations being normal, and there was